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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/665,991

09/19/2003

Henry V. Allen

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20350

7590

11/02/2005

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EXAMINER

ELLINGTON, ALANDRA

ART UNIT

PAPER NUMBER

2855

DATE MAILED: 11/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/665,991

Applicant(s)

ALLEN ET AL.

Examiner

Alandra Ellington

Art Unit

2855



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on amendment filed on 8/23/05.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-11, 15-18 and 20-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-11, 15-17 and 20-22 is/are rejected.
- 7) ☒ Claim(s) 18, 23, 24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Non-Final Rejection

Drawings

1. Figure 1A should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 9-11, 15-17 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Acknowledged Prior Art (hereinafter AAPA) in view of Iznadnegahdar et al (US 2003/0029245) (hereinafter Iza).

a. With respect to claims 9, 20 and 22, AAPA discloses a pressure sensor 100 with a diaphragm 110 having a top and a bottom, a sidewall 120, the sidewall 120 having an interior side defining a backside opening 130, 135, the sidewall 120 extending from the diaphragm 110 to the backside opening

130,135, wherein the interior side of the sidewall 120 is formed by etching, and wherein the backside opening 130,135 is non-rectangular (pg. 1 [0002-0003] {Fig. 1A}). However, AAPA does not specifically teach the use of a deep reactive ion etch. Iza teaches the use of a deep ion etch to form an interior of a sidewall (pg. 4 [0048]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify AAPA with the teachings of Iza to include the use of a deep reactive ion etch to form an interior of a sidewall for the purpose of removing the sacrificial portion in order to form or locate specific areas on the diaphragm (see Iza, pg. 1 [0004], pg. 4 [0048]).

b. With respect to claims 10 and 11, AAPA in view of Iza discloses the claimed invention except for specifically teaching a rounded square or a castle shaped backside opening. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of AAPA and Iza to include a rounded square or a castle shaped backside opening, since it has been held that a change in the shape of a component is generally recognized as being within the level of ordinary skill in the art. *MPEP 2144.04*.

c. With respect to claim 15, AAPA discloses a pressure sensor 100 with a diaphragm 110 and a sidewall 120, the sidewall 120 having an interior side defining a backside opening 130,135, and the sidewall 120 extending from the diaphragm 110 to the backside opening 130,135 (pg. 1 [0002-0003] {Fig. 1A}). However, AAPA does not specifically teach a block covering the backside opening such that a hermetic seal is formed. Iza teaches a block covering the

backside opening such that a hermetic seal is formed (pg. 2 [0022], pg. 5 [0051-0052]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify AAPA with the teachings of Iza to include a block covering the backside opening such that a hermetic seal is formed for the purpose of protecting the contents within the sensor cavity and to create a vacuum or near-vacuum conditions within the cavity (see Iza, pg. 2 [0022], pg. 5 [0051-0052]).

d. With respect to claim 16, Iza teaches a silicon block 50 (pg. 4 [0046], pg. 5 [0049-0051]).

e. With respect to claim 17, Iza teaches a glass block 50 (pg. 4 [0046] {Fig. 10}).

f. With respect to claim 21, AAPA discloses a pressure sensor 100 with a diaphragm 110, a sidewall 120 extending from the bottom of the diaphragm 110, the sidewall 120 having an interior side formed from etching and forming a backside cavity 130 having a backside opening 135, the diaphragm 110 is less than 350 microns in length, and the diaphragm 110 accounts for more than 10 percent of an area of the pressure sensor 100 (pg. 1 [0002-0004] {Fig. 1A}).

However, AAPA does not specifically teach the use a deep reactive ion etch. Iza teaches the use of a deep ion etch to form an interior of a sidewall (pg. 4 [0048]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify AAPA with the teachings of Iza to include the use of a deep reactive ion etch to form an interior of a sidewall for the purpose of

removing the sacrificial portion in order to form or locate specific areas on the diaphragm (see Iza, pg. 1 [0004], pg. 4 [0048]).

Allowable Subject Matter

4. Claims 18 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter: The reasons for the indication of allowable subject matter are based on the inclusion of:

- a. In claim 18, a glass block covered with metal over a backside opening top of a diaphragm, wherein the cap and diaphragm form a reference cavity.
- b. In claim 23, first and second electrodes attached to the top and underside of the diaphragm.
- c. In claim 24, a piezoresistive sensing circuit formed in the top of the diaphragm.

Response to Arguments

8. Applicant's arguments with respect to claims 9-11, 15-18 and 20-24 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2855

(US 2002/0100316) (5,549,006)

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alandra Ellington whose telephone number is (571) 272-2178. The examiner can normally be reached on Monday - Friday, 8:30am - 5:00pm.

11. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571) 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alandra Ellington 10/27/05
Art Unit 2855

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MAX NOORI
PRIMARY EXAMINER